CLAIM AMENDMENTS

1. (previously presented) A method of producing a strained layer on a substrate, the method comprising the steps of:

providing at least one first epitaxial relaxing layer on an SOI-substrate,

producing a defect region in a layer neighboring a silicon layer of the SOI-substrate to which strain is to be transferred, and

relaxing at least one layer neighboring the silicon layer to strain the silicon layer of the SOI-substrate and to produce the strained silicon layer.

2. (previously presented) The method according to claim 1, further comprising the step of

forming defects that give rise to relaxation of at least one neighboring layer of the layer which is to be strained.

3. (previously presented) The method according to claim 1, further comprising the step of

subjecting the layer structure for relaxation to a thermal treatment and/or oxidation.

4. (previously presented) The method according to claim 1, further comprising the step of

depositing the first layer upon the silicon layer to be strained.

5. (previously presented) The method according to claim 4 wherein the first layer has a different degree of stress than the silicon layer to be strained.

6. (previously presented) The method according to claim 4 wherein the defect region is produced in the first layer.

7 - 9. (canceled)

10. (previously presented) The method according to claim 1 wherein two neighboring layers of the layer to be strained have other degrees of stress than the layer to be strained.

11. (previously presented) The method according to claim 1 wherein a plurality of layers are relaxed.

12. (previously presented) The method according to claim 1 wherein a plurality of layers to be strained, have strain transferred to them.

13. (previously presented) The method according to claim 1, further comprising the step of

depositing on the first layer epitaxially at least one second layer with a different lattice structure.

14. (previously presented) The method according to claim 13 wherein the defect region is produced in the second layer.

15. (previously presented) The method according to claim 1 wherein on the layer to which strain is to be transferred at least one graded layer is deposited as the first layer.

16. (previously presented) The method according to claim 15 wherein at the region of the layer to be strained, the graded layer has a degree of strain that is different from that of the layer to be strained.

17. (previously presented) The method according to claim 15, further comprising the step of

producing a defect region in the graded layer.

18. (previously presented) The method according to claim 1, further comprising the step of

depositing an epitaxial layer structure comprising a plurality of layers on the substrate.

19. (previously presented) The method according to claim 1, further comprising the step of

relaxing the first layer by a thermal treatment.

20. (previously presented) The method according to claim 19 wherein the thermal treatment is done at a temperature between 550 degrees and 1200 degrees C.

21. (previously presented) The method according to claim 19 wherein the thermal treatment is done at a temperature between 700 degrees and 980 degrees C.

22. (previously presented) A method according to claim 19 wherein the thermal treatment is carried out in an inert atmosphere.

23. (previously presented) The method according to claim 19 wherein the thermal treatment is carried out in a reducing or oxidizing or nitriding atmosphere and especially in nitrogen.

24. (previously presented) The method according to claim 1 wherein the relaxation is carried out over a limited region of a layer.

25. (previously presented) The method according to claim 1, further comprising the step of

applying a mask.

26. (previously presented) The method according to claim 1 wherein the defect region is produced by ion implantation.

27. (previously presented) The method according to claim 26 wherein for the implantation, hydrogen ions or helium ions are used.

28. (previously presented) The method according to claim 27 wherein the hydrogen ions or helium ions are implanted with a dose of 3×10^{15} to 4×10^{16} cm^{-2}.

29. (previously presented) The method according to claim 26 wherein the implantation is done with Si ions.

30. (previously presented) The method according to claim 29 wherein the Si ions are implanted with a dose of about 0.5×10^{14} to 5×10^{14} cm^{-2}.

31. (previously presented) The method according to claim 26 wherein for the implantation, carbon ions, nitrogen ions, fluorine ions, boron ions, phosphorous ions, arsenic ions, germanium ions, antimony ions, sulfur ions, neon ions, argon ions, krypton ions and/or xenon ions are used.

32. (previously presented) The method according to claim 26 wherein at least two implantations are carried out.

33. (previously presented) The method according to claim 32 wherein a hydrogen implantation is carried out in combination with a helium implantation.

34. (previously presented) The method according to claim 32 wherein a boron implantation is carried out in combination with a hydrogen implantation.

35. (previously presented) The method according to claim 13, further comprising out the step of

carrying out two implantations to produce two defect regions in the first layer and in the second layer.

36. (previously presented) The method according to claim 26 wherein the substrate during the ion implantation is tilted at an angle greater than 7 degrees,.

37. (previously presented) The method according to claim 32 wherein between two implantations a thermal treatment is carried out.

38. (previously presented) The method according to claim 1 wherein the defect region is produced by a change in the temperature during the formation of one of the layers.

39. (previously presented) The method according to claim 1 wherein the defects are produced in a Si-C layer by thermal treatment.

40 - 41. (canceled)

42. (previously presented) The method according to claim 1 wherein a silicon surface layer of the SOI substrate is the layer to be strained and the SiO_2 of the SOI substrate forms the insulator of the substrate.

43. (previously presented) The method according to claim 1 wherein an SIMOX or BESOI substrate is selected as a base structure for the substrate.

44. (previously presented) The method according to claim 1, further comprising the step of

selecting a silicon on sapphire as a base structure for the substrate.

45. (currently amended) The method according to claim 1 wherein the [[one]] layer neighboring the silicon layer becomes viscous at a temperature required for the relaxation.

46 - 47. (canceled)

48. (previously presented) The method according to claim 1 Si-Ge or Si-Ge-C or Si-C as the material for the first layer which is deposited on the layer to be strained.

49. (canceled)

50. (previously presented) The method according to claim 13 wherein silicon as the material for the second layer which is deposited upon the first layer.

51. (previously presented) The method according to claim 15, further comprising the step of

selecting Si-Ge as the material for a graded layer.

52. (previously presented) The method according to claim 51 wherein the germanium concentration in the graded layer decreases from the interface with the layer to be strained to the surface of the graded layer.

53. (previously presented) The method according to claim 15 wherein the germanium concentration in a Si-Ge layer at the interface with the layer to be strained is 100 percent.

54. (previously presented) The method according to claim 1 wherein the total layer thickness of the layer structure is so selected that during growth of the applied layers these do not produce any noticeable relaxation.

55. (previously presented) The method according to claim 54 wherein the dislocation density after the growth amounts to less than 10^5 cm^{-2}.

56. (previously presented) The method according to claim 1 wherein a layer to be strained has a thickness d_3 in the range of 1 to 50 nanometers.

57. (previously presented) The method according to claim 1 wherein the silicon layer to be strained has a thickness d_3 in the range of 5 to 30 nanometers.

58. (previously presented) The method according to claim 57 wherein the first layer has a thickness d_4 close to a critical layer thickness for pseudomorphic growth.

59. (previously presented) The method according to claim 58 wherein a layer thickness ratio d_4/d_3 is greater than about 10.

60. (previously presented) The method according to claim 13 wherein the second layer has a thickness d_5 = 50 - 1000 nanometer.

61. (previously presented) The method according to claim 13 wherein the second layer has a thickness d_5 = 300 - 500 nanometer.

62. (previously presented) The method according to claim 1 wherein the layer to be strained is locally strained.

63. (previously presented) The method according to claim 62 wherein the layer to be strained is locally strained in regions which are vertical in a plane with the defect region.

64. (previously presented) The method according to claim 13 wherein the defect region is produced at a spacing of 50 to 500 nanometers from the layer to be relaxed.

65. (previously presented) The method according to claim 1 wherein the defect region is at a spacing of 50 to 100 nanometers above the first layer on the layer to be strained.

66. (previously presented) The method according to claim 13, further comprising the step of

removing the first and second layers after producing the strained layer or after producing a strained region.

67. (previously presented) The method according to claim 1 wherein wet chemical material-selective etching is used.

68. (previously presented) The method according to claim 67, further comprising the step of

etching trenches in the depth of the layers.

69. (previously presented) The method according to claim 68, further comprising the step, after producing the etched trenches , of

relaxing the first layer or a further layer by a thermal treatment.

70. (previously presented) The method according to claim 68, further comprising the step of

filling the trenches with insulating material to produce shallow trench insulation.

71. (previously presented) The method according to claim 1, further comprising the step of

carrying out at least one further thermal treatment for relaxation of one or more layers.

72. (previously presented) The method according to claim 1 wherein a strained layer or an unstrained layer are produced with a surface roughness of less than 1 nanometer.

73. (previously presented) The method according to claim 72 wherein a surface roughness of the layers is further reduced by the growth of a thermal oxide thereon.

74. (previously presented) The method according to claim 1, further comprising the step of

producing on a strained region of the layer an n- and/or p- MOSFET.

75. (previously presented) The method according to claim 1, further comprising the step of

depositing a further epitaxial layer comprising silicon or silicon/germanium or an Si-Ge-C layer or a germanium layer.

76. (previously presented) The method according to claim 1, further comprising the step of

producing on a strained silicon-germanium region p-MOSFETs as further epitaxial layers or as nonrelaxed layers structures.

77. (previously presented) The method according to claim 1, further comprising the step of

producing on unstrained region of the layer 3 to be strained, bipolar transistors.

78. (previously presented) The method according to claim 77 wherein for producing a bipolar transistor, a silicon-germanium layer is applied.

79. (previously presented) The method according to claim 1, wherein the steps of claim 1 are carried out a plurality of times.

80 – 89. (canceled)

90. (withdrawn) An electronic component comprised of a layer structure according to one of the preceding claims 80 - 89.

91. (withdrawn; currently amended) A transistor especially a modulated doped field effect transistor or a metal

oxide semiconductor field effect transistor forms the component according to claim 90.

92. (withdrawn) A fully depleted MOSFET as the component according to claim 90.

93. (withdrawn; currently amended) A tunnel diode, especially a silicon germanium tunnel diode as the component according to claim 90.

94. (withdrawn) A silicon-germanium quantum cascade laser as the component according to claim 90.

95. (withdrawn) A photo detector as the component according to claim 90.

96. (withdrawn) A light emitting diode as the component according to claim 90.

97. (previously presented) A method of producing a strained layer on a substrate, the method comprising the steps of:

providing only one first relaxing layer on an SOI-substrate;

producing a defect region in the first layer; and

relaxing the first layer and simultaneously straining a neighboring thin silicon layer of the SOI-substrate to produce the strained silicon layer.

98. (previously presented) A method of producing a strained layer on a substrate, the method comprising the steps of:

providing a first relaxing layer on an SOI-substrate;

epitaxially forming a second layer with a different structure on the first layer;

producing a defect region in the second layer; and

relaxing the first layer and simultaneously straining a thin adjacent layer of the SOI-substrate to produce the strained silicon layer.